Atmospheric conditions during solar radiation measurements. Blue Hill Observatory of Harvard University

Date and time from apparent noon	Air temperature	Wind Beaufort	Visibility (0–10)	Sky blueness	Cloudiness and remarks
June 1936	° C.				
1; 4:34 a. m.	+16.8	SSW 4	7	6	7 Acu; mod. haze.
2; 2:34 p. m.	+26.4	SSW 6	7	6	3 Ci; dense forest fire smoke.
3; 2:09 a. m.	+22.5	S 3	6	5	Zero clouds; dense water haze.
3; 2:49 p. m.	+21.1	SSE 3	7	6	Zero clouds; dense water haze.
5; 1:52 a. m.	+20.0	NE 3	8	8	2 Ci; light to moderate haze.
5; 0:22 p. m.	+21.2	ENE 3	8	8	Few Ci; 2 Cu; light haze.
6; 4:07 a. m.	+19.2	NNE 3	8	8	Few Ci; light to moderate haze.
6; 0:27 p. m.	+22.3	E 2	8	8	Few Ci; light haze.
7; 3:16 a. m.	+21.7	S 2	8	8	3 Ci; light haze.
8; 0:27 p. m.	+21.7	NE 2	7	7	3 Ci; few Acu.
9; 4:25 p. m.	+17.2	NE 3	8	7	Few Ci; few Acu; few Cu; light haze.
16; 2:29 a. m.	+17.8	NW 4	8	7	Few Acu; few Frcu; light haze.
16; 2:54 p. m.	+21.6	NW 4	9	7	Few Ci; few Acu; few Cu; light haze.
17; 4:26 a. m.	+15.6	NNW 2	9	8	Few Ci; light haze; incinerator smoke.
17; 2:53 a. m.	+18.3	W 2	9	8	Few Ci; Few Acu; light haze.
22; 4:16 a. m.	+13.3	NW 3	9	8	1 Ci.
22; 0:02 a. m.	+17.2	NW 3	10	8	Few Ci; 1 Cu.
23; 3:55 a. m.	+17.8	E 2	7	8	Few Ci; light haze.
25; 2:49 a. m.	+18.1	NW 2	8	8	2 Ci; few acu; few Cu; light haze.
29; 3:45 a. m.	+15.1	WNW 4	9	8	Few Ci; 1 Cu and Frcu; wind gusty.
29; 3:19 a. m.	+15.7	WNW 4	9	8	Few Ci; wind gusty.
30; 2:21 a. m.	+15.6	SW 2	9	6	4 Acu; few Cu; light haze.
30; 1:30 p. m.	+20.2	W 4	9	7	Few Ci; 2 Cu; light haze.

POSITIONS AND AREAS OF SUN SPOTS

Communicated by Capt. J. F. Hellweg, U. S. Navy (Ret.), Superintendent U. S. Naval Observatory. Data furnished by the U. S. Naval Observatory in cooperation with Harvard and Mount Wilson Observatories. The difference in longitude is measured from the central meridian, positive west. The north latitude is positive. Areas are corrected for foreshortening and are expressed in millionths of the sun's visible hemisphere. The total area for each day includes spots and groups]

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
1936	h m	°	°	°				
June 1	11 55	−33.0	125.7	−25.0		123		U. S. Naval.
		−25.0	143.7	−18.0		617		
		+34.0	202.7	−16.0		278		
		+64.0	232.7	+23.0		154	1,172	
June 2	12 15	−19.0	136.3	−24.5		123		Do.
		−11.0	144.3	−18.0		463		
		+17.0	172.3	+31.5		62		
		+47.0	202.3	−16.0		278		
		+72.0	227.3	+23.5		31	957	
June 3	12 48	−6.0	135.7	−24.0		278		Do.
		+3.0	144.7	−18.0		370		
		+30.0	171.7	+31.0		46		
		+62.0	203.7	−16.0		247	941	
June 4	9 0	−3.0	127.6	+20.0		8		Mt. Wilson.
		+6.0	136.6	−24.0		464		
		+15.0	145.6	−18.0		109		
		+16.0	146.6	+19.0	2			
		+73.0	203.6	−16.0		39	622	
June 5	12 13	−45.0	70.6	−29.5		93		U. S. Naval.
		+11.0	126.6	+20.0		154		
		+18.0	133.6	−25.0		185		
		+25.0	140.6	−25.0	216			
		+28.0	143.6	−19.0		64		
		+33.0	148.6	−15.0		123	835	
June 6	11 39	−57.0	45.7	−25.5		93		Do.
		−31.5	71.2	−29.5		123		
		+24.0	126.7	+20.0		154		
		+32.0	134.7	−25.0		123		
		+38.0	140.7	−25.0	185		678	
June 7	13 19	−44.0	44.5	−26.0		154		Do.
		+37.0	125.5	+20.0		154		
		+47.0	135.5	−25.0		123		
		+52.0	140.5	−25.0	185		616	
June 8	13 0	−69.0	6.4	−26.0	87			Mt. Wilson.
		−30.0	45.4	−24.0		232		
		−2.5	72.9	+17.0		2		
		−1.0	74.4	−28.0	37			
		+50.0	125.4	+20.0		151		
		+65.0	140.4	−23.0		859		
		+75.0	150.4	−15.0	8		1,376	
June 9	14 49	−56.0	5.2	−27.0	62			U. S. Naval.
		−19.0	42.2	−25.0	31			
		−11.0	50.2	−25.5	93			
		+11.0	72.2	−29.0		31		
		+61.0	122.2	+20.5	46			
		+78.0	139.2	−24.0		309	572	
June 10	12 7	−45.0	4.5	−27.5	62			Do.
		−8.0	41.5	−25.0	15			
		−0.5	49.0	−26.5	77			
		+75.0	124.5	+20.0		46	200	

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
	h m	°	°	°				
June 11	11 49	−39.0	357.4	+22.0	31			U. S. Naval.
		−31.0	5.4	−28.0	93			
		−31.0	5.4	−16.0		46		
		−14.0	22.4	−21.0	31			
		+12.0	48.4	−26.5		77	278	
June 12	13 45	−78.0	304.1	+17.0		8		Mt. Wilson.
		−36.0	346.1	+23.0		25		
		−19.0	3.1	−27.0	35			
		+14.0	36.1	+14.0	11			
		+25.0	47.1	−25.0	58		137	
June 13	11 43	−23.0	347.0	+22.5		93		U. S. Naval.
		−8.0	2.0	−27.0		23		
		+24.0	34.0	−18.0	15			
		+38.0	48.0	−26.0	46		177	
June 14	13 10	−9.0	346.9	+22.0		35		Mt. Wilson.
		−5.0	350.9	+11.0	2			
		+6.0	1.9	−28.0		8		
		+51.0	46.9	−25.0	52		97	
June 15	12 13	−85.0	258.2	+19.0		216		U. S. Naval.
		−80.0	263.2	+23.0		62		
		+1.0	344.2	+23.0		77		
		+65.0	48.2	+25.0		46	401	
June 16	12 24	−71.0	258.9	+18.5		556		Do.
		−67.0	262.9	+27.0		154		
		+23.0	352.9	+15.0		93	803	
June 17	12 18	−80.0	236.7	+22.0		46		Do.
		−68.0	248.7	+12.0	23			
		−58.0	258.7	+18.5		741		
		−53.0	263.7	+27.0		77		
		+24.0	340.7	+22.0		93	980	
June 18	15 39	−65.0	236.6	+22.0	62			Do.
		−42.0	259.6	+18.5		617		
		−37.0	264.6	+27.0		62	741	
June 19	12 41	−70.0	220.0	+25.0		46		Do.
		−52.0	238.0	+21.0	31			
		−30.0	260.0	+19.0		525		
		−28.0	262.0	+26.0		62		
		+15.5	305.5	+18.0		77		
		+16.5	306.5	+10.5		123		
		+56.0	346.0	+18.0		31		
		+59.0	349.0	+25.0		31	926	
June 20	11 48	−59.0	218.3	+25.0		77		Do.
		−40.0	237.3	+20.5	31			
		−20.0	257.3	+19.0		494		
		−10.0	267.3	+18.0	62			
		−14.0	263.3	+27.0		93		
		+28.0	305.3	+18.0		46		
		+29.5	306.8	+11.0		31	834	
June 21	11 7	−46.0	218.4	+25.5		62		Do.
		−28.0	236.4	+21.0	31			
		−7.0	257.4	+19.0		401		
		−2.0	262.4	+27.0		62		
		+2.0	266.4	+18.0	46			
		+41.0	305.4	+18.0		46		
		+43.0	307.4	+11.0		31	679	
June 22	12 23	−68.0	182.5	−19.5		154		Do.
		−34.0	216.5	+26.0		31		
		−15.0	235.5	+21.0	23			
		+5.0	255.5	+20.0		309		
		+18.0	268.5	+18.0	46			
		+55.0	305.5	+11.0		31	594	
June 23	13 15	−51.0	185.8	−19.0		340		Mt. Wilson.
		−17.0	219.8	+27.0		8		
		0.0	236.8	+22.0	4			
		+6.0	242.8	+14.0		11		
		+24.0	260.8	+20.0		412		
		+25.5	262.3	+27.0		52		
		+48.0	284.8	−28.0		202		
		+66.0	302.8	−14.0	2			
		+79.0	315.8	+10.0	5		1,036	
June 24	12 50	−39.0	184.8	−19.0		308		Do.
		+1.0	224.8	+26.0	3			
		+23.0	246.8	+14.0		4		
		+23.0	246.8	+28.0	2			
		+39.0	262.8	+20.0		438		
		+43.0	266.8	+27.0	2			
		+59.0	282.8	−28.0		261	1,018	
June 25	11 40	−32.0	179.2	−20.0	15			U. S. Naval.
		−24.5	186.7	−19.5		185		
		−11.0	200.2	+19.0		123		
		+32.0	243.2	+11.0		46		
		+43.0	254.2	+19.0		401		
		+50.0	261.2	+17.0		123		
		+70.0	281.2	−27.5		247	1140	
June 26	12 16	−43.0	154.6	−20.0	15			Do.
		−11.0	186.6	−20.0	123			
		+3.0	200.6	+18.0		463		
		+48.0	245.6	+11.0		46		
		+63.0	260.6	+27.0	15			
		+64.0	261.6	+19.0		370	1032	

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longitude	Longitude	Latitude	Spot	Group		
	h m	°	°	°				
June 27	8 50	−42.0	144.3	+16.0	4			Mt. Wilson.
		−30.5	155.8	−19.0		16		
		+1.0	187.3	−19.0		150		
		+15.0	201.3	+17.0		439		
		+40.0	226.3	+24.0	10			
		+62.5	248.8	+14.0		3		
		+75.0	261.3	+23.0		151		
		+76.0	262.3	+28.0	3			
		+80.0	266.3	−14.0	22		798	
June 28	11 15	−22.0	149.7	−18.5		46		U.S. Naval.
		−15.0	156.7	−19.5	15			
		+10.0	181.7	−20.0		46		
		+16.0	187.7	−19.0	77			
		+30.0	201.7	+19.0		494	678	
June 29	11 36	−8.0	150.3	−19.0		62		Do.
		+25.0	183.3	−20.0		309		
		+43.0	201.3	+27.0		46		
		+44.0	202.3	+19.0		494	911	
June 30	12 21	+4.0	149.0	−19.0		31		Do.
		+38.0	183.0	−20.0		278		
		+57.0	202.0	+19.0		617		
		+57.0	202.0	+27.0		77	1003	

Mean daily area for 30 days, 741.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, JUNE 1936

[Data dependent alone on observations at Zurich and its station at Arosa]

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

June 1936	Relative numbers	June 1936	Relative numbers	June 1936	Relative numbers
1	78	11	35	21	*bd*119
2	98	12	*Ec*40	22	*b*100
3	*b*65	13	43	23	*Wc*76
4	*Mac*—	14	32	24	71
5	62	15	*d*19	25	*Mc*89
6		16	55	26	*a*112
7	*Ec*69	17	67	27	*a*103
8	73	18	60	28	68
9	64	19	101	29	68
10	*a*40	20	88	30	79

Mean, 28 days=70.5.

a=Passage of an average-sized group through the central meridian.
b=Passage of a large group or spot through the central meridian.
c=New formation of a center of activity: *E*, on the eastern part of the sun's disk; *W*, on the western part; *M*, in the central circle zone.
d=Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE in Charge]

By L. P. HARRISON

The normal monthly means of temperature and humidity used as a basis for computing the departures from normal given in table 1 are derived from observations distributed over the following numbers of years: Omaha, 5; Pensacola, 9; Seattle, 6; San Diego, 8; Washington, 11; Norfolk, 8; and Pearl Harbor, 7. The total number of observations represented by the normal in each case is indicated in the note at the foot of the table.

The departures from normal temperature during June in the middle Atlantic coastal area were of negative sign at all levels as evidenced by data for Norfolk and Washington. The departures for Norfolk appear especially significant since they amounted to as much as −2.5° C. at 5 km and at the surface. A scrutiny of the isothermal charts for the month at the various levels disclosed a rather pronounced trend of the isotherms in the general direction WNW to ESE as the coast is approached in the levels from 2–4 km over the northeastern corner of the country. From this and the facts previously adduced, one is led to infer that temperatures were generally below normal in this sector during June, at least at moderate elevations (2.5 km). Furthermore, temperatures for the month in the Lake region appeared below normal in the lower elevations.

The departures from normal of the temperatures at Omaha were mostly positive but small in magnitude; the largest was +1.0° C. at 4 km. The departures at San Diego were all positive except at the surface (−0.7° C.), most of them being small to moderate in magnitude; the largest was +2.0° C. at 5 km. Similarly, the departures at Pensacola were all positive except at the surface (−1.4° C.), most of them being quite small in magnitude, and the largest +0.9° C. at 1 km. Seattle had too few observations (7) to give reliable results in this connection.

The departures from normal relative humidity during June were mostly positive at Norfolk but negative at Washington; the largest was +7 percent at 2 and 2.5 km in the former case, and +12 percent at the surface with −7 percent at 0.5 km in the latter case. At the 4- and 5-km levels, both stations were in agreement by having positive departures of small magnitude (1–4 percent). Isohygrometric lines on the charts for the various levels reveal an outstanding maximum at Mitchel Field, especially at 4 km, and a very rapid decrease in relative humidity southward therefrom; thus at this level monthly means were: Mitchel Field, 73 percent; Lakehurst, 44 percent; Washington, 52 percent; and Norfolk, 49 percent. Boston had a corresponding mean of 57 percent, but this is probably in error by being somewhat too low, inasmuch as this station had but 19 observations during June, whereas Mitchel Field had 25, and a number of the days for which data are lacking at the former place were predominantly days with fog, low ceiling, and rain. We are thus led to infer that probably the free-air relative humidities were generally above normal in a strip along the coast in the northeastern sector of the country. This inference is consistent with the above-normal precipitation during June in this region.

The humidities at Pensacola were mostly below normal but the departures were small in magnitude, with the largest negative departure, −3 percent, at 5 km; however at the surface there was a positive departure of +8 percent.

Omaha had fairly large negative departures in the lowest levels (surface to 1.5 km, m. s. l.); the largest was −10 percent at 0.5 km above sea level (0.2 km above surface). However, small positive departures (1–3 percent) occurred at the 2.5-, 3-, and 5-km levels.

Comparing, on the isohygrometric charts, the data for the two stations last referred to with the data for other stations in the Mississippi-Missouri watershed, there appear to be three outstanding loci or centers with pronounced deficiency of humidity: (*a*) the upper Mississippi-Missouri watershed in the lower levels (surface to about 2 km above sea level), (*b*) the lower Mississippi watershed at moderate and high elevations (2.5–5 km), and (*c*) the Great Lakes region at high elevations (4–5 km). The loci of these three regions are best exemplified